UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/548,876	04/13/2000	Jason D. Miller	0-03A	7633

7590 09/10/2003

James A Flight
Marshall O'Toole Gerstein Murray & Borun
6300 Sears Tower
233 South Wacker Drive
Chicago, IL 60606-6402

EXAMINER	
HORTON, YVONNE MICHELE	

ART UNIT	PAPER NUMBER
3635	

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary	Application No. 09/548,876	Applicant(s) JASON MILLER ET AL.
	Examiner YVONNE M. HORTON	Art Unit 3635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Jun 12, 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 2, 4-17, 19, and 20* is/are pending in the application.

4a) Of the above, claim(s) ______ is/are withdrawn from consideration.

5)☒ Claim(s) *7-11* is/are allowed.

6)☒ Claim(s) *1, 2, 4-6, 12-17, 19, and 20* is/are rejected.

7)☐ Claim(s) ______ is/are objected to.

8)☐ Claims ______ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on ______ is/are a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on ______ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some* c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. ______.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). ______

4) ☐ Interview Summary (PTO-413) Paper No(s). ______

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other:

DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1,2,4-6,12-15 stand and claims 17,19 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by US patent 6016637, **Styba**.

In regards to claims 1 and 17, **Styba** discloses a dock pad (24) adapted to seal against a vehicle parked against the dock pad, comprising a foam core (30); a cover (40) disposed on the foam core; and a heat shield (34) adjacent the cover, wherein the dock pad is adapted to seal against the vehicle by virtue of the foam core being compressible, the cover being pliable, and the heat shield being pliable. Although the heat shield (34) of **Styba** is noted for use as a puncture resistor, **Styba** also discloses that this material (34) could be "polyester". Polyester is well known in the art for its flexible and flame resistance characteristics. So, even though **Styba** does not explicitly state that the material (34) is a "heat shield", heat resistance is an inherent characteristic of the disclosed material - polyester, see the attached definition of a

polyester resin and characteristics associated therewith. The thermal conductivity of a particular material is also an inherent characteristic of the material. The core (30) of **Styba** is polyurethane. Polyurethane has a thermal conductivity of 0.017*k*, *see the attached transmission of heat chart.* The heat shield (34) is made from a polyester material. Polyester has a thermal conductivity of 0.31*k* or 0.48*k* depending upon whether it was hand laid or pultruded. At any rate, the thermal conductivity of the heat shield (34) of **Styba** is higher than the thermal conductivity of the foam core.

In regards to claims 2 and in further regards to claim 17, **Styba** discloses the heat shield (34) being interposed between the cover (40) and the foam core (30), see Figure 4.

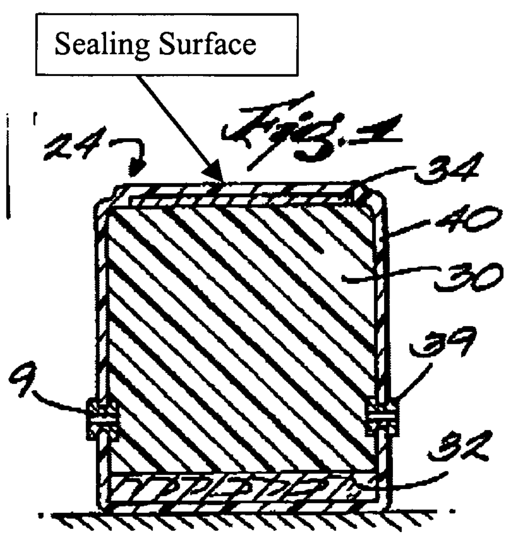
In reference to claim 4, the cover (40) of **Styba** is a vinyl plastic (typically PVC). PVC has a thermal conductivity of 0.01*k*, see also the attached chart, and the heat shield (34), has thermal conductivity of 0.01*k* or 0.48*k*. Thus, the heat shield (34) of **Styba** has a higher thermal conductivity than the cover (40).

In regards to claims 5 and 6, "thermal conductivity" is the measurement of the speed at which heat travels through a material through conduction. Therefore, the lower the *"k"* value, the better the thermal transmission. Hence, the lower the *"k"* value more heat is transmitted thereby having less of the ability to withstand high temperatures. Thus, the heat shield (34), has thermal conductivity of 0.01*k* or 0.48*k* and the core (30) has a thermal conductivity of 0.017*k* and the cover (40) has a

thermal conductivity of 0.01*k*; inherently, the heat shield (34) can withstand higher temperatures than both the cover and the core.

In reference to claim 12, **Styba** discloses a backer (32) attached to the cover (40). The backer (32) is wood and knowingly has a greater rigidity than the foam core (30). The backer (32) serves to provide the foam core (30) and the cover (40) with structural support.

In regards to claim 13, in Figure 4 below, **Styba** discloses a sealing surface and a mounting surface (MS) that face away from each other with at least a portion of the heat shield (34) extending substantially parallel to the sealing surface and being closer to the sealing surface than the mounting surface (MS), wherein the sealing surface is adapted to seal against the vehicle and the mounting surface (MS) is adapted to be attached to a wall (16). (See Below).



In regards to claim 14, **Styba** discloses the dock pad (10) having an elongated length (20) running substantially horizontally.

In regards to claim 15, **Styba** discloses the dock pad (10) having an inverted "U-shape" with one horizontally elongated member (20) and two vertically elongated members (18, 18'), with the heat shield (34) being part of the horizontally elongated member (20).

Regarding claim 19, again, **Styba** is not explicit as the flexibility of the materials of his dock seal. However, he does disclose in column 2, lines 41-52 that his dock seal has the ability to "compress" in response to a vehicle coming in contact therewith. **Styba** further details, column 2, lines 53 to column 3, line 2, that the core (30) of his dock seal is "resilient". A resilient material has the ability to regain its original shape. Hence, inherently, the material of the heat shield (34) must be capable of enough flexibility to allow the core (30) to compress and return to its original shape.

In reference to claim 20, **Styba** discloses dock pad, comprising a backer (32); a foam core (30); a cover (40); and a heat shield (34); wherein the foam core (30) is between the backer (32) and a sealing surface (see figure 4 above) of the cover (40), the heat shield (34) being between the foam core (30) and the sealing surface, the backer (32) being made from wood or metal which are inherently more rigid than the foam core (30) and the vinyl cover (40). **Styba** does not explicitly disclose the heat shield being able to withstand a higher temperature than the foam core and the cover. However, **Styba** does disclose that his heat shield (34) is made from polyester, the

cover (40) is vinyl, and the core (30) is polyurethane. As can be seen from the attached chart, polyester has a thermal conductivity of *0.31k or* 0.48*k* , vinyl (PVC) has a thermal conductivity of 0.21*k,* and polyurethane has a thermal conductivity of 0.17*k.* "Thermal conductivity" is the measurement of the speed at which heat travels through a material through conduction. Therefore, the lower the *"k"* value, the better the thermal transmission. Hence, the lower the *"k"* value more heat is transmitted thereby having less of the ability to withstand high temperatures. Thus, the heat shield (34) can withstand higher temperatures than both the cover and the core.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Styba** in view of **Commercial Material RTCM01**. **Styba** discloses the claimed invention except for the heat shield including aluminum. **RTCM01**, as disclosed by the applicant, consists of two sheet layers of perforated aluminum. Since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, it too would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the heat shield of **Styba** with the aluminum of **RTCM01** in order to ensure that the dock pad is not only puncture resistant but also resistant to excessive heat conditions thereby increasing the life of the dock pad.

Allowable Subject Matter

1. Claims 7-11 are allowed.

2. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to teach the thermal reflectivity and auto ignition points of the heat shield and the foam cores.

Response to Arguments

Applicant's arguments filed 7/8/02 have been fully considered but they are not persuasive because although the **Styba** does not explicitly detail the inherent physical characteristics of the materials of the elements of his invention, the rejections have been modified by a chart providing the thermal conductivity for the materials as mentioned in **Styba.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvonne M. Horton whose telephone number is (703) 308-1909.

Yvonne M. Horton
Patent Examiner
Art Unit 3635
September 8, 2003

TRANSMISSION OF HEAT

Conduction, Convection and Radiation

Thermal Conductivity

Thermal conductivity is the measurement of the speed at which heat travels through a material through *conduction*. In the United States thermal conductivity (also referred to as the "k" value) is commonly expressed in terms of the number of BTUs of heat which will travel through one sq. foot of material which is one inch thick when there is one degree F temperature difference across the material (ie. Delta T). This expression is often stated as btu/in/hr/sq.ft/°F. The lower the "k" value the better the thermal insulation. The term "R" value is frequently used to describe the performance of insulation materials. The "R" value is simply the reciprocal of the "k" value. Therefore, the higher the "R" value, the better the insulation quality.

For example: Polyurethane foam insulation board is commonly rated at a thermal conductivity of .17 (point one seven). This means that a 1" piece of foam 12" square would permit .17 BTUs of heat to move through it in one hour if there were a temperature difference of 1^0 F on either side. Were the temperature difference across the material to be increased to 10 degrees, then the 1.7 BTUs would move through it in the same hour.

Listed below is the thermal conductivity of some common materials.

MATERIAL	CONDUCTIVITY ("k")	INSULATIVE ("R")
Copper	2712.00	.00037
Aluminum (6061)	1160.00	.00086
Aluminum (5052)	960.00	.00104
Lead	245.00	.004
Stainless Steel (316)	113.00	.00885
Glass	5.00	.20
Polyester FRP (hand laid)	.48	2.08
Polyethylene Foam	.43	2.33
Wood (dry)	.33	3.03
Polyester FRP (pultruded)	.31	3.26
Glass Wool	.29	3.45
Polystyrene (expanded)	.28	3.57
Cork Board	27	3.70
Polystyrene (extruded)	.21	4.80
PVC (Klegecell)	.21	4.80
Polyurethane Foam	.17	5.88
Air	.16	6.25
BARRIER 20 (new)	.037	27.02
BARRIER 20 (20 years)	.05	20.00
AURA Panels	.013	75.00
Total Vacuum	.004	250.00

The chart above provides generally accepted thermal conductivities typical of the materials described. Do to the variations in individual manufacturers formulations and production methods significant variations can exist between apparently similar products. It should also be remembered that thermal conductivity of the material is only one of several factors effecting the heat transfer which takes place in everyday objects. Depending on the materials involved, others factors may include *convection* (in gases and liquids) and/or *radiation* with varying emphasis on the related components *emissivity* and *absorptivity*.

Convection

In some cases the contributions of convection and radiation play only a minor part in comparison to that of conduction. However, under some conditions, the effects of one or both can be very significant. Convection is the term used to describe the motion or, circulation current, which is set up in any gas or liquid as it is heated or cooled. Convection is not, in itself, a singular heat transport vehicle as is conduction and radiation. Instead, it greatly increases conduction by constantly circulating colder material to the warm surfaces, thus increasing the effective

gins to degrade at 148C, retains strength and elastomeric properties in contact with synthetic lubricants, solvents, hydraulic fluids, oils, etc. at temperatures in the range 148–204C, has limited flexibility at temperatures below -17C. Nonflammable.
Use: O-rings, seals, gaskets, diaphragms, hose, sheets and coatings for fabrics and other surfaces.

polydimethylsiloxane. (PDMS). A silicone polymer developed for use as a dielectric coolant and in solar energy installations. It also may have a number of other uses. It is stated to be highly resistant to oxidation and to biodegradation by microorganisms. It is degradable when exposed to a soil environment by chemical reaction with clays and water, by which it is decomposed to silicic acid, carbon dioxide, and water.

poly-p-dinitrosobenzene. See "Polyac."

"Polydril."[233] TM for a synthetic water-soluble polymer.
Use: Flocculating agent in the oil industry.

polyelectrolyte. A high polymer substance, either natural (protein, gum arabic) or synthetic (polyethyleneimine, polyacrylic acid salts) containing ionic constituents; may be either cationic or anionic. The former type is widely used for industrial applications. Water solutions of both types are electrically conducting, some are effective in concentrations as low as 1 ppm. In a given polyelectrolyte, ions of one sign are attached to the polymer chain, while those of opposite sign are free to diffuse into the solution. Major uses are flocculation of solids (especially dissolved phosphates) in potable water, dispersion of clays in oil well drilling muds, soil conditioning, antistatic agents, and treatment of paper-mill waste water. Ion-exchange resins are cross-linked (stabilized) polyelectrolytes.
See also flocculant; "Purifloc"; "Cat-Floc."

polyene. Any unsaturated aliphatic or alicyclic compound containing more than four carbon atoms in the chain and having at least two double bonds. Examples are pentadiene, cyclooctatriene.

polyester fiber. Generic name for a manufactured fiber (either as staple or continuous filament) in which the fiber-forming substance is any long chain synthetic polymer composed of at least 85% by weight of an ester of a dihydric alcohol and terephthalic acid (Federal Trade Commission).
See "Dacron"; polyethylene terephthalate.
Properties: Strength (staple) 2.2–4.0 g per denier;

Use: Tire fabric, seat belts, reinforcement of rubber hose for sea water cooling systems, as blend in clothing fabrics, fire-hose jackets.

polyester film. Continuously extruded polyester sheet of various thicknesses, especially useful in electrical equipment because of its high resistivity. Its tensile strength of 25,000 psi is much greater than that of other plastic films. Sensitized polyester film is used in magnetic tapes, in the photocopying technique known as reprography.

polyester resin. Any of a group of synthetic resins, which are polycondensation products of dicarboxylic acids with dihydroxy alcohols. They are thus a special type of alkyd resin but, unlike other types, are not usually modified with fatty acids or drying oils. The outstanding characteristics of these resins is their ability, when catalyzed, to cure or harden at room temperature under little or no pressure. Most polyesters now produced contain ethylenic unsaturation, generally introduced by unsaturated acids. The unsaturated polyesters are usually crosslinked through their double bonds with a compatible monomer, also containing ethylenic unsaturation, and thus become thermosetting. Flame resistance is imparted by using either acid or glycol ingredients having a high content of halogens, e.g., HET acid.

The principal unsaturated acids used are maleic and fumaric. Saturated acids, usually phthalic and adipic, may also be included. The function of these acids is to reduce the amount of unsaturation in the final resin, making it tougher and more flexible. The acid anhydrides are often used if available and applicable. The dihydroxy alcohols most generally used are ethylene, propylene, diethylene, and dipropylene glycols. Styrene and diallyl phthalate are the most common crosslinking agents. Polyesters are resistant to corrosive, chemicals, solvents, etc.
Forms: Sheets, powder, chips.
Use: Reinforced plastics, automotive parts, boat hulls, foams, encapsulation of electrical equipment, protective coatings, ducts, flues and other structural applications, low-pressure laminates, magnetic tapes, piping, bottles, nonwoven disposable filters, low-temperature mortars.
See also alkyd resin, polyester fiber.

polyethenoid. Characterizing an aliphatic compound having more than one ethene group —CH=CH—. Linoleic acid is a polyethenoid fatty acid.

polyether. A polymer in which the repeating unit contains a C=O bond derived from aldehydes

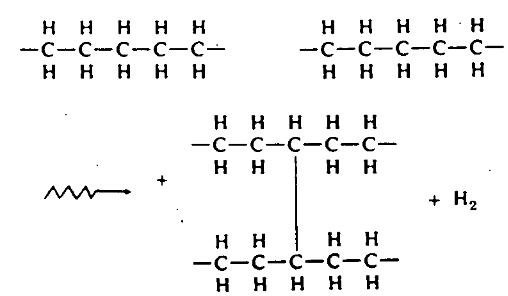
polyether, chlorinated. A highly crystalline material that is 46% chlorine. Outstanding corrosion-resistance. Good electrical resistance. Readily processed and fabricated.
Use: Fluid-bed coating, tank linings, piping, valves, laboratory equipment, chemical processing equipment.

polyether, cyclic. See crown ether.

polyether foam. A polyurethane foam, either rigid or flexible, made by use of a polyether as distinct from a polyester or other resin component.
Hazard: As for polyurethane.

polyether glycol. A compound with a structural skeleton such as HO—C—C—O—C—C—O—C—C—O—C—C—OH. The length of the chain can vary widely and the number of consecutive carbon atoms may be greater than two. Examples are polyethylene glycol and polypropylene glycol.

polyethylene. CAS: 9002-88-4. $(H_2C{=}CH_2)_x$
chlorosulfonated. See "Hypalon."
crosslinked (XLPE).
Properties: Thermosetting white solid, high-temperature-resistant, excellent resistance to chemicals and to creep, high impact and tensile strength, high electrical resistivity, insoluble in organic solvents, does not stress-crack. Combustible.
Derivation: (a) By irradiating linear polyethylene with electron beam or gamma radiation, crosslinking taking place through a primary valence bond, as shown.



(b) By chemical crosslinking agent such as an organic peroxide (e.g., benzoyl peroxide). All grades of polyethylene and most copolymers can be chemically crosslinked.
Use: Wire and cable coatings and insulation (low-density grades), pipe and molded fittings (high-density grades). Special types having low electrical resistivity can be made; these can be regarded as semiconductors.

is initiated, as
after crosslinki
and wide rang
of a universal
polymers.
Density
The density
plastic polyme
spacing of the
terials have hi
chains, where
comparatively
chains. Polym
linear. The ph
fected by incre
low-density (bra
Propert Crys
240F, tensile st
above 10 ft-lb/i
× 10-5inch/inc
above 200F, in
Derivation: (1) E
radical-initiated
mospheres (22,
as catalyst (usu
more effective a
of only 100–300
is undisclosed a
Use: Packaging f
paper coating,
ping containers
cordage, refuse
base, squeeze b
high-density (line
Properties: Cryst
tensile strength
lb/in notch, hig
perme hyd
acid.
Derivation: Ethyl
lysts at 1–100 at
room temperatu
alkyl, e.g., trieth
$(TiCl_4)$ dissolve
vapor-phase mod
veloped in 1965.
tallic catalysts as
vents such as cy
Use: Blow-mold
items, film and sh
oil containers.
Note: Ethylene ma
ing percentages o
or acrylic acid; a
copolymerization
When butadiene i
a vulcanizable el
low molecular wei